EE213

Treatment Patterns, Healthcare Resource Utilization and Costs among Patients with Tenosynovial Giant Cell Tumor (TGCT) in the United States

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CONCLUSION

- **TGCT was associated with substantial clinical burden, treatment burden, healthcare resource utilization (HCRU), and costs.**
- **Patients with diffuse TGCT (D-TGCT) experienced greater clinical burden than patients with localized TGCT (L-TGCT), including more frequent surgery, greater outpatient utilization, and 4-times higher TGCT-related costs.**
- **The substantial economic burden and HCRU in TGCT was primarily driven by outpatient care.**

INTRODUCTION

- TGCT is a rare, locally aggressive soft-tissue tumor affecting the synovium, bursa, or tendon sheath.[1]
- Although TGCT is generally non-malignant, it may be associated with devastating morbidity including pain, swelling, functional limitation, and repeated procedures.[2,3]
- Real-world evidence on the clinical and economic burden and treatment patterns of TGCT may provide valuable insights regarding its evolving management and may inform clinical practice and healthcare decision-making.

OBJECTIVES

- To evaluate treatment patterns, HCRU, and costs in patients with TGCT in the United States (US).

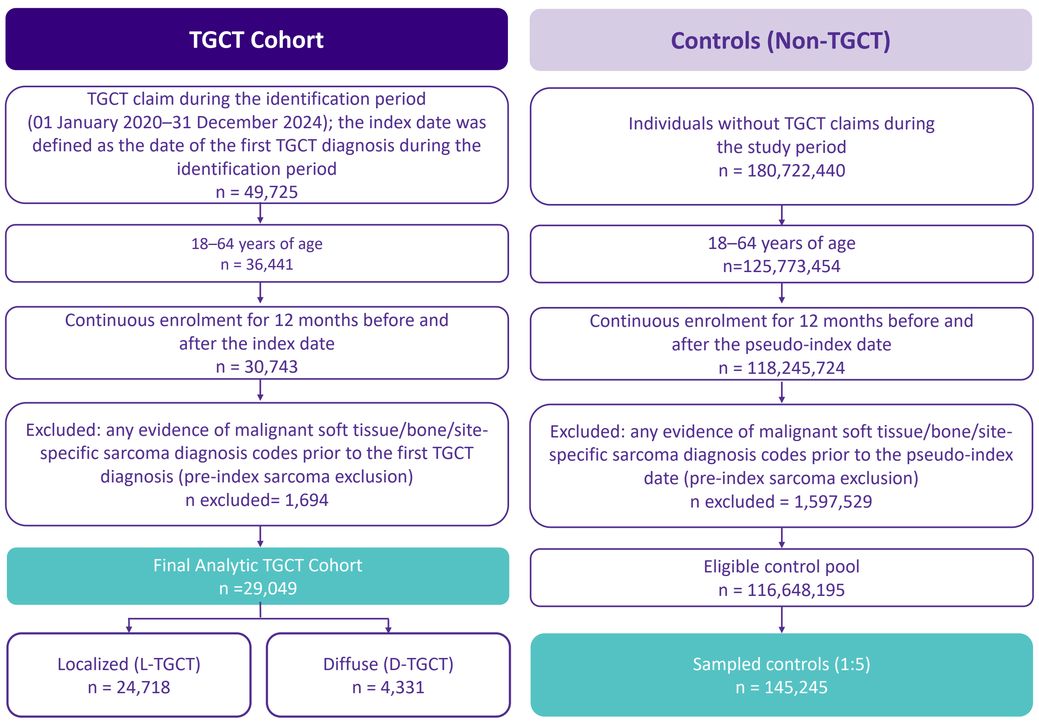
METHODS

- **Study Design:** Retrospective cohort analysis
- **Data Source:** Kythera Labs commercial claims database
- **Study Population:** Adults (18–64 years) with L-TGCT or D-TGCT identified between January 2020 and December 2024 within the study period of January 2019 to December 2025.
- **Patient Selection:** Patients were identified using International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) codes and were required to have ≥1 inpatient/emergency department claim or ≥2 outpatient claims for TGCT which were ≥30 days apart and ≥12 months of continuous enrolment before and after the index date. Those with evidence of pre-index malignant sarcoma or desmoid tumors were excluded.
- **Outcomes:** Treatment patterns, HCRU, and costs were assessed overall and stratified by TGCT subtype.
- **Statistical Analysis:** Propensity score matching (PSM) was performed between patients with TGCT and non-TGCT controls to compare all-cause HCRU and costs. Covariates in the logistic regression model included age, gender, region, socioeconomic status, index year, and comorbidities. Balance after matching was assessed using absolute standardized differences, with values <0.10 considered well balanced.

RESULTS

- Overall, the study included 24,718 patients with L-TGCT (L-TGCT cohort) and 4,331 patients with D-TGCT (D-TGCT cohort), and 145,245 controls without TGCT (**Figure 1**).

Figure 1. Study attrition for the TGCT and Non-TGCT control cohorts



D-TGCT, Diffuse Tenosynovial Giant Cell Tumor; L-TGCT, Localized TGCT
Note: All counts represent unique patients during the identification period. Subjects were classified as L-TGCT or D-TGCT according to the diagnosis code on the index claim.

- Before PSM, patients with TGCT were older than non-TGCT controls (mean age 48.31 vs. 41.36 years), were more frequently located in the Northeast (27.80% vs. 18.41%), and less frequently located in the Midwest (13.93% vs. 18.66%), and had greater comorbidity (mean Charlson Comorbidity Index [CCI] score 0.51 vs. 0.17, mean Elixhauser Index score 1.45 vs. 0.54, and mean Chronic Disease Score [CDS] 1.93 vs. 0.87).
- After matching, demographic and clinical characteristics were well balanced between the overall TGCT cohort and matched controls (**Table 1**).

Table 1. Baseline characteristics after 1:1 propensity score matching

Characteristic	Matched Controls (N = 29,049)	Overall TGCT (N = 29,049)	Std diff	Matched Controls (N = 24,718)	L-TGCT (N = 24,718)	Std diff	Matched Controls (N = 4,331)	D-TGCT (N = 4,331)	Std diff
Age									
Mean (SD)	48.78 (12.16)	48.31 (11.95)	0.038	49.16 (12.02)	48.64 (11.83)	0.043	46.70 (12.68)	46.47 (12.44)	0.019
Gender, n (%)									
Male	9,114 (31.37)	9,133 (31.43)	0.001	7,489 (30.29)	7,536 (30.48)	0.004	1,617 (37.33)	1,597 (36.87)	0.010
Female	15,870 (54.63)	15,250 (52.49)	0.043	13,712 (55.47)	13,194 (53.37)	0.042	1,998 (46.13)	2,056 (47.47)	0.027
Geographic Region, n (%)									
Northeast	7,739 (26.64)	8,077 (27.80)	0.026	6,116 (24.74)	6,286 (25.43)	0.016	1,656 (38.23)	1,791 (41.35)	0.064
Midwest	4,259 (14.66)	4,047 (13.93)	0.021	3,712 (15.01)	3,560 (14.40)	0.017	512 (11.82)	487 (11.24)	0.018
South	10,095 (34.75)	9,791 (33.70)	0.022	9,240 (37.38)	8,543 (34.56)	0.059	1,417 (32.71)	1,248 (28.81)	0.085
West	4,856 (16.71)	5,072 (17.46)	0.020	4,315 (17.45)	4,549 (18.40)	0.025	537 (12.39)	523 (12.07)	0.010
Socioeconomic Status, n (%)									
Low tercile	9,422 (32.43)	9,402 (32.36)	0.002	8,008 (32.39)	7,981 (32.28)	0.002	1,443 (33.31)	1,421 (32.80)	0.011
Middle tercile	9,576 (32.96)	9,383 (32.30)	0.014	8,258 (33.40)	8,039 (32.52)	0.019	1,363 (31.47)	1,344 (31.03)	0.009
High tercile	9,371 (32.25)	9,670 (33.28)	0.022	7,918 (32.03)	8,208 (33.20)	0.025	1,431 (33.04)	1,462 (33.75)	0.015
Comorbidity Scores, mean (SD)									
CCI	0.47 (0.99)	0.51 (0.99)	0.037	0.48 (1.01)	0.52 (1.00)	0.044	0.41 (0.92)	0.41 (0.86)	0.002
Chronic Disease Score	2.01 (2.68)	1.93 (2.55)	0.033	1.99 (2.68)	1.90 (2.56)	0.033	2.23 (2.85)	2.06 (2.52)	0.066
Elixhauser Index	1.39 (2.17)	1.45 (2.14)	0.031	1.42 (2.20)	1.49 (2.18)	0.036	1.24 (2.10)	1.22 (1.88)	0.010

CCI, Charlson Comorbidity Index; D-TGCT, Diffuse Tenosynovial Giant Cell Tumor; L-TGCT, Localized TGCT; PSM, propensity score matching.
Note: Proportions may not total to 100% due to missing data for some patients.

- Among patients with TGCT, the mean duration of follow-up was ~3.5 years and was similar across subtypes (**Table 2**).
- Overall, 42.05% of patients had surgery (D-TGCT: 57.01%; L-TGCT: 39.43%). Of the patients who were surgically treated, 16.02% experienced a primary subsequent treatment episode (D-TGCT: 34.22%; L-TGCT: 11.41%) and of these, 7.46% of the patients experienced a secondary subsequent treatment episode (D-TGCT: 7.93%; L-TGCT: 7.10%) (**Table 2**).

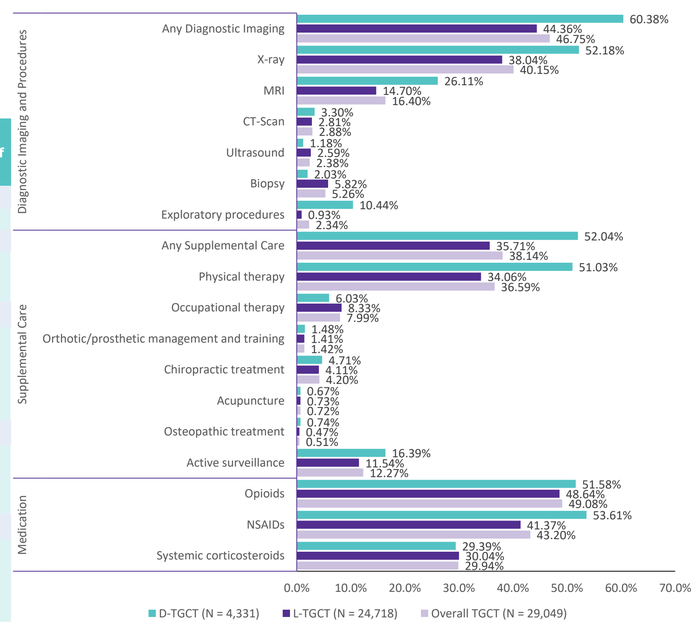
Table 2. Clinical burden outcomes among patients diagnosed with TGCT

Outcome	Overall TGCT (N=29,049)	L-TGCT (N=24,718)	D-TGCT (N=4,331)
Length of Follow-up, days, mean (SD)	1264.4 (521.9)	1267.5 (519.3)	1246.5 (536.6)
Initial surgery, n (%)	12,215 (42.05)	9,746 (39.43)	2,469 (57.01)
Primary subsequent treatment episode among surgically treated patients, n (%)	1,957 (16.02)	1,112 (11.41)	845 (34.22)
Median time to primary subsequent treatment episode, days (IQR)	364 (183, 695)	434 (230, 784)	281 (154, 539)
Secondary subsequent treatment episode among patients with primary subsequent treatment episode, n (%)	146 (7.46)	79 (7.10)	67 (7.93)
Median time to secondary subsequent treatment episode, days (IQR)	308 (201, 550)	373 (231, 651)	252 (161, 392)
Number of surgeries per patient, n (%)			
1	8,994 (30.96)	7,710 (31.19)	1,284 (29.64)
2	2,510 (8.64)	1,575 (6.37)	935 (21.58)
≥3	711 (2.44)	461 (1.86)	250 (5.77)

D-TGCT, Diffuse Tenosynovial Giant Cell Tumor; IQR, interquartile range; L-TGCT, Localized Tenosynovial Giant Cell Tumor; TGCT, Tenosynovial Giant Cell Tumor.
Note: Primary subsequent treatment episode was defined as first TGCT treatment after initial surgery identified by a subsequent TGCT diagnosis code ≥3 months after the initial surgery code, followed by a new TGCT procedure code or initiation of systemic therapy. Secondary subsequent treatment episode was defined as additional TGCT treatment after primary subsequent treatment episode identified by subsequent TGCT diagnosis codes ≥3 months after the previous subsequent treatment episode, followed by additional TGCT procedure codes or changes/reinitiation of systemic therapy.

- Multiple surgeries were more common in patients with D-TGCT (2 surgeries: 21.58%; ≥3 surgeries: 5.77%) in comparison to patients with L-TGCT (2 surgeries: 6.37%, ≥3 surgeries: 1.86%) (**Table 2**).
- Overall, supplemental care (38.14%), diagnostic imaging (46.75%), opioid use (49.08%), and NSAIDs use (43.20%) were also observed (**Figure 2**).

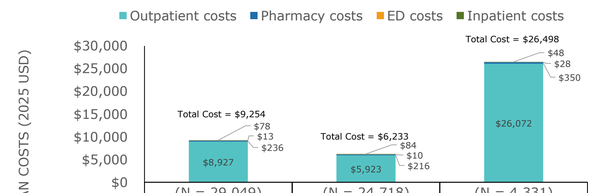
Figure 2. Healthcare resource utilization among patients diagnosed with TGCT



CT, computed tomography; D-TGCT, Diffuse Tenosynovial Giant Cell Tumor; L-TGCT, Localized TGCT; MRI, magnetic resonance imaging; NSAIDs, nonsteroidal anti-inflammatory drugs.
Note: Supplemental care does not include active surveillance.

- In the 12-month post-index period, nearly all patients with TGCT had at least one TGCT-related outpatient visit (Overall: 97.12%; L-TGCT: 97.09%; D-TGCT: 97.25%). Patients with D-TGCT had a higher number of outpatient visits vs. L-TGCT (4.2 vs. 3.2 per person per year [PPPY]).
- After PSM, the overall TGCT population showed a higher all-cause outpatient utilization as compared with the matched controls (14.5 vs. 5.9 visits PPPY). Outpatient HCRU was higher among patients with D-TGCT (16.7 visits PPPY) vs. L-TGCT (14.2 visits PPPY).
- Total TGCT-related follow-up costs were more than 4 times higher in patients with D-TGCT vs. L-TGCT ($26,498 vs. $6,233 PPPY). TGCT-related pharmacy costs were comparatively low ($350 vs. $216 PPPY, respectively); claims data do not distinguish patient out-of-pocket payments from other reimbursed amounts (**Figure 3**).

Figure 3. TGCT-related follow-up costs among patients diagnosed with TGCT

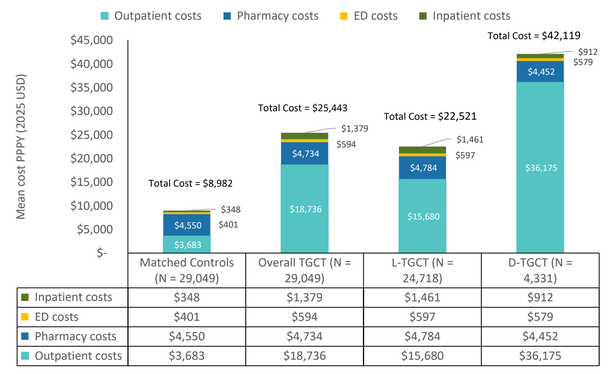


	(N = 29,049) Overall TGCT	(N = 24,718) L-TGCT	(N = 4,331) D-TGCT
Inpatient costs	$78	$84	$48
ED costs	$13	$10	$28
Pharmacy costs	$236	$216	$350
Outpatient costs	$8,927	$5,923	$26,072

D-TGCT, Diffuse Tenosynovial Giant Cell Tumor; ED, emergency department; L-TGCT, Localized TGCT; USD, United States dollars. Note: TGCT-related costs include costs attributed to TGCT excluding the non-TGCT-related costs. Costs are reported PPPY and adjusted to 2025 USD. TGCT-related medications considered for TGCT-related pharmacy costs included CSF-1 inhibitors (pexidartinib and vimseltinib), tyrosine kinase inhibitors (dasatinib, imatinib, nilotinib, sorafenib, and sunitinib), monoclonal antibodies (denosumab and bevacizumab), and anti-TNF agents (infliximab, etanercept, and adalimumab)

- Patients with D-TGCT incurred the highest all-cause follow-up costs ($42,119 PPPY) compared with the L-TGCT ($22,521 PPPY) and matched controls ($8,983 PPPY, **Figure 4**).
- Outpatient visits accounted for the largest share of costs (D-TGCT: $36,175 PPPY; L-TGCT: $15,680 PPPY; matched controls: $3,683 PPPY, **Figure 4**).

Figure 4. Matched all-cause follow-up costs among patients diagnosed with TGCT and non-TGCT controls



	Matched Controls (N = 29,049)	Overall TGCT (N = 29,049)	L-TGCT (N = 24,718)	D-TGCT (N = 4,331)
Inpatient costs	$348	$1,379	$1,461	$912
ED costs	$401	$594	$597	$579
Pharmacy costs	$4,550	$4,734	$4,784	$4,452
Outpatient costs	$3,683	$18,736	$15,680	$36,175

D-TGCT, Diffuse Tenosynovial Giant Cell Tumor; ED, emergency department; L-TGCT, Localized TGCT; PPPY, per person per year; USD, United States dollars.

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DISCLOSURES

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